

LISTING OF CLAIMS

1. (currently amended) A method of controlling peak firing pressure and turbine inlet temperature in a diesel engine having a turbocharger, the method comprising:

sensing inlet charge air pressure and charge air temperature;
obtaining fuel injection timing, engine speed and load;
determining current peak firing pressure;
computing charge air density and turbine inlet temperature;
transmitting charge air density, turbine inlet temperature and peak firing pressure to an electronic bypass valve control unit (BVCU);
comparing transmitted values of the turbine inlet temperature and the peak firing pressure with allowable maximums of these values stored in the BVCU; and
controlling the bypass valve to divert a sufficient portion of compressed air from a compressor outlet around the engine to maintain at least one of the peak firing pressure and the turbine inlet temperature within maximum allowable values.

2. (original) A method as in claim 1 wherein the obtaining step includes obtaining the fuel injection timing, engine speed and load from an engine control unit.

3. (original) A method as in claim 1 wherein the determining step includes measuring the peak firing pressure.

4. (original) A method as in claim 1 wherein the determining step includes computing the peak firing pressure.

5. (currently amended) A method as in claim 4 wherein the peak firing pressure is computed from engine ~~geometry~~ parameters, the engine speed, the computed charge density and the fuel injection timing.

6. (currently amended) A method as in claim 1 wherein the turbine inlet temperature is computed from the computed charge air density, the engine speed, the engine load and the fuel injection timing.

7. (currently amended) A method as in claim 1 including:
determining ~~the value of a~~ NOx exhaust emission value ~~emissions~~ and
transmitting the NOx exhaust emission value to the BVCU, and
controlling the bypass valve to divert a sufficient portion of compressed air from the compressor outlet around the engine to maintain NOx exhaust emissions within maximum allowable values stored in the BVCU.

8. (currently amended) A method as in claim 1 including:
determining ~~the value of a~~ visible exhaust smoke value;
transmitting the visible exhaust smoke value to the BVCU, and
controlling the bypass valve to divert a sufficient portion of compressed air from the compressor outlet around the engine to maintain allowable smoke emissions within maximum allowable values stored in the BVCU.

9. (original) A method as in claim 1 including conducting compressed air diverted around the engine to a turbine inlet of the turbocharger to utilize the energy in the diverted gas to maintain compressor speed while reducing the temperature of exhaust gas driving the turbine.

10. (original) A method as in claim 1 including conducting compressed air diverted around the engine to an engine exhaust outlet to maximize the effectiveness of the controlling step.